REMARKS

Claims 1, 5-9, 11, 14 and 15 were pending in the instant application. By this Amendment, Applicants have amended claim 1. Support for the claim amendment can be found in the specification and claims as originally filed, specifically, at page 3, lines 14-18, *inter alia*, of the specification. The present Amendment introduces no new matter, and thus, its entry is respectfully requested. Upon entry of the present Amendment, claims 1,5-9, 11, and 14-15 will be pending and under examination.

Previous Rejection Withdrawn

The Examiner has withdrawn the previous rejection of claims 1, 5-11 and 13-15 under 35 U.S.C. §112, second paragraph, in view of Applicants' September 5, 2003 Amendment.

In response, Applicants acknowledge and appreciate the withdrawal of this rejection.

New claim rejections

The Examiner rejected claims 1, 5, 6, 8 and 11 under 35 U.S.C. 102(b) as anticipated by Guo et al. (Disi Junyi Daxue Xuebao 20 (1), 85-88, 1999).

According to the Examiner, Guo, et al. teaches a method for purifying recombinant human interferon-α (rhIFN-α) using magnetic affinity microsphere (MAMS, referred to in abstract). The Examiner stated that in the Guo reference, magnetic agarose microspheres are prepared from magnetic powders (Fe_3O_4;) embedded in agarose, and that rhIFN-α monoclonal antibodies were linked to a matrix by the CNBr method (page 86, paragraph

1), in which OH groups on the surface can be modified to different functional groups (page 86, paragraph 2). The Examiner pointed out that the pore size of the matrix is about 1 μm (Fig. 1). According to the Examiner, the solution containing rhIFN- α is mixed with MAMS and left overnight. The MAMS is then removed from the solution and subsequently washed with PBS buffer, and rhIFN-α is then eluted from MAMS and separated from the MAMS by magnetic separation. The purity is checked by SDS-PAGE (page 87, paragraph 2.4). It is the Examiner's position that the monoclonal antibody, which is linked to the matrix, would contain many hydrophilic amino acids such as Ser and Thr, and hydrophobic amino acids such as Val, Leu and Phe which have aryl or alkyl side chains on the surface.

The Examiner rejected claims 1, 5, 6, 8 and 11 under 35 U.S.C. 102(b) as anticipated by Margel, et al. (Analytical Biochemistry 128, 342-350 (1983)).

According to the Examiner, Margel, et al. teach a method for purifying antibodies using magnetic agarose-polyaldehyde microsphere beads conjugated with proteins, wherein magnetic agarose-polyaldehyde microsphere beads having diameters of 50-150 μm were produced by carrying out the encapsulation of the microspheres in the presence of ferrofluidic material (page 342, right column). The magnetic agarose-polyaldehyde microsphere beads, with or without bound spacer, are coupled with an appropriate antigen, such as BSA, in PBS, to form an immunoadsorbent (page 344, right column; page 345). The Examiner indicated that the immune serum was passed through a column containing the immunoadsorbent, the immunobeads were then washed with PBS, and antibodies

were eluted with 0.2 M glycine-HC1 buffer at pH 2.4. The removal of unbound antibodies and the washing steps were achieved by successive decantation with a magnetic field (page 345-page 346, left column; Table 5). It is the Examiner's position that the antigen such as BSA, which is linked to the microsphere, would contain many hydrophilic amino acids, such as Ser and Thr, having hydroxyl side chains, and hydrophobic amino acids, such as Val, Leu and Phe, having aryl or alkyl side chains on the surface. The Examiner added that the agarose beads also would contain many hydroxyl groups on their surfaces.

The Examiner indicated that claims 7, 9, 14 and 15 were rejected because of their dependencies from a rejected base claim.

In response, Applicants respectfully traverse the above rejections. First, without conceding the correctness of the Examiner's positions, but to advance prosecution of the subject application, Applicants have amended claim 1. As, amended, claim 1 now clarifies that the proteinaceous material is bound reversibly and unspecifically to the hydrophobic groups. Neither of the references cited by the Examiner teach or suggest this feature. Rather, both the Guo and Margel references relate only to methods in which proteins are bound specifically.

Guo, et al. refers to a method in which a monoclonal antibody (Mab) is covalently bound to a magnetic microsphere. The attached Mab is then used to bind specifically to rhIFN-α. Similarly, in Margel, proteins are first bound covalently to beads via their aldehyde groups, then, antibodies are bound specifically via the covalently bound proteins.

This specific binding involved in the prior art methods (e.g., through antibody-antigen interactions of specific proteins) only allows for binding between proteins having particular recognition sequences, not general, unspecific binding of a proteinaceous material to a hydrophobic surface on a solid phase. The present invention thus is not limited as are the methods referred to in the art cited by the Examiner. For at least the above reasons, therefore, neither of the references cited by the Examiner teaches or suggests a method as presently claimed by Applicants. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejections of the claims under 35 U.S.C. §102.

In view of the above remarks and amendments, Applicants believe that the Examiner's rejections set forth in the November 20, 2003 Office Action have been fully addressed and overcome and that the present application is in condition for allowance. The Examiner is invited to telephone the undersigned if it is deemed to expedite allowance of the application.

Respectfully submitted,

February 20, 2004 By 

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